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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/633,357
Filing Date: August 01, 2003
Appellant(s): HEDLUND ET AL.

Brian L. Arment, Reg. No. 64,134
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1/21/11 appealing from the Office action mailed 6/25/10.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 1, 3-22, and 25-34 are pending in the application.

Claims 1, 3-22, and 25-34 have been finally rejected.

Claims 1, 3-22, and 25-34 are being appealed.

Claims 2, 23, and 24 have been canceled.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

6,587,831	O'Brien	07-2003
7,222,082	Adhikari	05-2007

Burke et al., Variable Neighborhood Search for Nurse Rostering Problems, Kluwer Academic Publishers, 12/19/2002, pg. 1–21.

Chun et al., Nurse Rostering at the Hospital Authority of Hong Kong, American Association for Artificial Intelligence, 2000, pg. 1–6.

Burke et al., Fitness Evaluation for Nurse Scheduling Problems, Proceedings of Congress on Evolutionary Computation, CEC2001, Seoul, IEEE Press, 2001, pg. 1139–46.

Applicant's Admitted Prior Art

GMT Planet software, as evidenced by gmtcorp.com, GMTPlanet, 2001, pg. 1–45, retrieved from web.archive.org, http://web.archive.org/web/20010415113036/www.gmtcorp.com/

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 3–12, 15–16, and 18–19 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Brien, U.S. Pat. 6,587,831 (see PTO-892, 2/28/2008, ref. C) in view of Burke et al., Variable Neighborhood Search for Nurse Rostering Problems, Kluwer Academic Publishers, 12/19/2002, pg. 1–21 [hereinafter Burke] further in view of Chun et al., Nurse Rostering at the Hospital Authority of Hong Kong, American Association for Artificial Intelligence, 2000, pg. 1–6 [hereinafter Chun] further in view of Burke et al., Fitness Evaluation

for Nurse Scheduling Problems, Proceedings of Congress on Evolutionary Computation, CEC2001, Seoul, IEEE Press, 2001, pg. 1139–46 [hereinafter Burke 2].

5. As per claim 1, O'Brien teaches a computer implemented method for automatically generating an optimized workforce schedule, comprising:
in a scheduling server (Fig. 1, ref. 110, Host; col. 3, lines 23–38, discussing host server capabilities), processing past schedules using a pattern recognition procedure to recognize historical shift patterns for a particular position indicated in the past schedules (Fig. 4; col. 5, lines 10–13, 25–37, 48–62, discussing the forecasting module analyzing intrinsic company workload data to derive optimal shift patterns and staffing requirements), wherein the historical shift patterns comprise a resource dependent shift pattern and a time dependent shift pattern (col. 5, lines 30–33, discussing workload records and final staffing requirements for each shift being analyzed; lines 35–37, discussing patterns of high and low volume for various times of the day being found); and in the scheduling server, creating an initial workforce schedule and refining it based on historical shift patterns and employee attributes to generate an optimized workforce schedule based on the initial workforce schedule, forecasted demand, and employee preferences (Fig. 2, refs. 230 and 250; Fig. 4, refs. 420 and 450; col. 5, lines 48–62, col. 5, line 65–col. 6, line 2; col. 1, lines 49–51, discussing employee preferences which are taken into account in devising a schedule) but does not explicitly create the initial workforce schedule based on the historical and attribute data and then refine it to generate the optimized workforce schedule. However, Burke, in the analogous art of nurse rostering problems, teaches this concept of refining an initial solution by using a neighborhood search algorithm (pg. 14–15, "Starting from an initial solution,

local search is applied in the first neighbourhood. If the local optimum thus found is better than the current best solution, the algorithm moves there and continues the search in the first neighbourhood; otherwise, it employs the next neighbourhood and applies the corresponding search method. The algorithm stops when the search in the last neighbourhood does not lead to an improvement."; Fig. 4, showing a search routine wherein the steps are reiterated until the best solution is found). It would have been obvious to one having ordinary skill in the art to modify O'Brien to include the teachings of Burke, providing the benefit of a more accurate schedule and therefore a more efficient implementation of the workforce.

O'Brien in view of Burke does not explicitly teach use of a ratio dependent shift pattern based on when a certain number of a first type of position must be scheduled with a certain number of a second type of position, in its shift scheduling analysis. However, Chun, in the analogous art of nurse rostering via constraint satisfaction problem modeling, teaches ratio dependent shift patterns based on when a certain number of a first type of position must be scheduled with a certain number of a second type of position (pg. 3, Manpower Demand Constraint, "This type of constraint defines manpower requirement for a specific rank, staff group, gender or their combination in a particular shift, as well as the alternative manpower demand patterns in case the original demand cannot be satisfied. For example: □ Exactly 4 registered nurses on Monday morning can be replaced by 3 registered nurses and 1 enrolled nurse or by 2 registered nurses and 1 student nurse."). Although not explicitly recognized in the context of a historical shift pattern, applying the known technique of historical shift pattern recordation and use to predict future shifts, as taught by O'Brien as discussed above, as well as by Burke (pg. 13, "Possibilities exist for starting from . . . the schedule of the previous planning

period . . . .") and Burke 2 as discussed below, to a known element, namely a ratio dependent shift pattern based on when a certain number of a first type of position must be scheduled with a certain number of a second type of position, would have been obvious so as to produce a predictable result and result in an improved system that maximize the productivity of available resources, avoiding the wasteful scenario wherein capable workers are not assigned to a potential job merely because they are unaccustomed to performing said job and therefore such an arrangement goes unrecognized by the scheduling means.

O'Brien in view of Burke does not explicitly teach wherein the resource dependent shift pattern is based on when a resource is working a particular position. However, Chun teaches this concept because its rostering engine takes into account historical staffing data including when a resource is working a more or less desirable shift (pg. 4, "In addition, our Rostering Engine ensures that all staffs are treated fairly by using different types of historical statistics to generate the roster. The statistics indicate how "well" each staff has been treated so far, in terms of the number of more desirable or less desirable shifts assigned in the past. Based on the statistics, the Rostering Engine tries to evenly assign "good" shifts to balance out the statistics"). It would have been obvious to one having ordinary skill in the art to modify O'Brien in view of Burke to include the teachings of Chun for the benefit of maintaining employee productivity by providing them a fair and balanced shift schedule, avoiding the perception or reality of employee bias.

O'Brien in view of Burke further in view of Chun does not explicitly teach wherein the time dependent shift pattern is based on when a specific task needs to be performed. However, Burke 2 teaches this concept in the analogous art of nurse scheduling problem analysis (pg. 1142, Tables 2 and 3, showing previous planning period data to be used in initialization of

solution for the current planning period, the previous planning period data including particular times of shifts, morning M, late L, or night N (see Table 1) when shift-related tasks needed to be performed by people P1–P5). It would have been obvious to one having ordinary skill in the art to modify O'Brien in view of Burke further in view of Chun to include the teaching of Burke 2 for the benefit of a more focused analysis that meets staffing requirements while maximizing usage of time available for resource productivity.

6. As per claim 3, O'Brien does not explicitly teach wherein employee attributes comprise an employee's skill set. However, Burke teaches this limitation (pg. 3, "Qualifications reflect the skills of the personnel. They normally depend on experience, level of education, etc. People can have an authority to replace personnel members with a different skill category."; pg. 13, "Shifts are added and/or removed randomly in order to satisfy the personnel demands for every skill category, thus satisfying the hard constraints."; "The nurse rostering problem is solved by scheduling each skill category separately."). It would have been obvious to one having ordinary skill in the art to modify O'Brien to include the teaching of Burke, providing the benefit of increased efficiency and productivity with respect to a company's work product by assigning qualified personnel to jobs demanding such.

7. As per claim 4, O'Brien teaches wherein employee preferences comprise an employee's desired number of hours (col. 4, lines 13–18, 30–39).

8. As per claim 5, O'Brien teaches receiving a forecasted demand as input (col. 3, lines 35–37, discussing the prospective use of forecasted workload demand from extrinsic information input to initiate a modification to the schedule; Fig. 4, ref. 420, Generate Workload Forecast; col. 5, lines 53–58) but does not explicitly apply this known technique to the particular refining step of claim 1, which is refining an already initially solved problem. However, applying this known concept to the particular refining step of claim 1 would have been obvious so as to produce a predictable result of a more accurate schedule and result in an improved system with enhanced operational efficiency.

9. As per claim 6, O'Brien does not explicitly teach wherein the forecasted demand is for a single employee position. However, O'Brien discloses wherein scheduling and preference data for each position is individually documented, and monitored for use in the analysis (col. 3, line 63–col.4, lines 9, Business Parameters). As such, applying the known technique of workforce demand forecasting to a known element, namely a single employee position, would have been obvious so as to produce a predictable result of a targeted demand forecast, resulting in an improved system that is better able to pinpoint the root cause of inefficiencies and therefore facilitate their remedy.

10. As per claim 7, O'Brien teaches wherein the forecasted demand is for multiple employee positions (col. 3, lines 35–37, discussing the prospective use of forecasted workload demand over the entire workforce from extrinsic information input to initiate a modification to the schedule; col. 5, lines 53–58, discussing forecasted).

11. As per claim 8, O'Brien teaches generating an optimized workforce schedule based on resource availability (col. 4, lines 13–20, discussing employee availability as an element of employee data, lines 51–52) but does not explicitly apply this known technique in the particular refining step of claim 1, which is refining an already initially solved problem. However, applying this known concept to the particular refining step of claim 1 would have been obvious so as to produce a predictable result of a more accurate schedule and result in an improved system with enhanced operational efficiency.

12. As per claim 9, O'Brien teaches generating an optimized workforce schedule based on a predefined number of work hours per week for an employee (col. 3, lines 63–66, business Parameters, minimum hours per schedule per position; col. 4, lines 13–18, Employee data, minimal hours of work per schedule, lines 30–39) but does not explicitly apply this known technique to the particular refining step of claim 1, which is refining an already initially solved problem. However, applying this known concept to the particular refining step of claim 1 would have been obvious so as to produce a predictable result of a more accurate schedule and result in an improved system with enhanced operational efficiency.

13. As per claim 10, O'Brien teaches generating an optimized workforce schedule based on various employee availability (col. 4, lines 12–13, 19–20, 25–27, discussing availability as data input of each employee; col. 4, lines 51–58, discussing use of availability data in calculating optimal schedule; col. 9, lines 17–26, disclosing that availability can be changed from

availability just on weekdays to weekdays and weekends) but does not explicitly apply this known technique to the particular refining step of claim 1, which is refining an already initially solved problem, nor does it explicitly mention full time and part time availability as inputs. However, applying this known concept of employee availability consideration to the particular refining step of claim 1 would have been obvious so as to produce a predictable result of a more accurate schedule and result in an improved system with enhanced operational efficiency. Furthermore, Burke teaches both full time and part time employee availability as a scheduling constraint (pg. 4, Constraints defined by the work regulation, taking into account the constraints of full time, part time, and night personnel in the schedule optimization calculation) and refining of the initial schedule as discussed in claim 1. As such, it would have been obvious to one of ordinary skill in the art to modify O'Brien to include the teachings of Burke because the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

14. As per claim 11, O'Brien teaches receiving a modification to the optimized workforce schedule from a user (see e.g., col. 3, lines 35–38, wherein a modification to the schedule can be proposed by user; col. 4, lines 25–27, wherein each employee can access host to modify or input availability data and request data; col. 7, lines 19–32, discussing a shift change initiated by employee).

15. As per claim 12, O'Brien teaches wherein the modification is received via an input device configured to provide changes for a particular resource through a user interface (col. 3, lines 11–17, discussing use of standard computers to access host. In order to input modifications to the schedule in a computer, some kind of input device is used).

16. As per claim 15, O'Brien in view of Burke further in view of Chun does not explicitly teach wherein the forecasted demand comprises multiple forecasts for a particular position. However, producing a demand forecast for a particular position was rendered obvious by O'Brien as discussed above in the rejection of 6 above. Also, O'Brien has the capability to perform demand forecasts at different times and hence multiple forecasts (col. 1, lines 16–20; col. 8, lines 47–50; col. 14, lines 20–22). As such, it would have been obvious to one of ordinary skill in the art to modify O'Brien because the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable, enabling a scheduling manager be better prepared and make more informed decisions by being aware of different demand scenarios for a particular position. Furthermore, it is noted that reiterating the demand forecasting process to attain another forecast for the same position can be reasonably considered mere duplication of parts for multiplicative effect, which has no patentable significance unless new and unexpected result is produced. In re Harza, 124 USPQ 378 (CCPA 1960); St. Regis Paper Co. v. Bemis Co., 193 USPQ 8, 11; 549 F2d 833 (7th Cir. 1977). Here, the predictable result of a second demand forecast for the position is neither new nor unexpected.

17. As per claim 16, O'Brien teaches wherein the resources selected for the initial workforce schedule are predefined (col. 4, lines 3–4).

18. Claim 18 recites limitations that stand rejected via the neighborhood search algorithm teachings of Burke in combination with the other art citations and rationale applied to claim 1 as discussed above.

19. As per claim 19, O'Brien teaches wherein employee resources are located in a centralized pool of resources (col. 3, lines 24–30, 55–61. All employee resources and associate data is received and maintained in the host server).

20. Claims 13–14 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Brien, U.S. Pat. 6,587,831 in view of Burke et al., Variable Neighborhood Search for Nurse Rostering Problems, Kluwer Academic Publishers, 12/19/2002, pg. 1–21 [hereinafter Burke] further in view of Chun et al., Nurse Rostering at the Hospital Authority of Hong Kong, American Association for Artificial Intelligence, 2000, pg. 1–6 [hereinafter Chun] further in view of Burke et al., Fitness Evaluation for Nurse Scheduling Problems, Proceedings of Congress on Evolutionary Computation, CEC2001, Seoul, IEEE Press, 2001, pg. 1139–46 [hereinafter Burke 2] further in view of Applicant's Admitted Prior Art.

21. As per claims 13–14, O'Brien in view of Burke further in view of Chun further in view of Burke 2 does not explicitly teach wherein the input device is a mouse or a keyboard. However, O'Brien does teach inputting scheduling information and changes via a standard computer. Official Notice was taken and not since adequately traversed by Applicant that a standard computer comprises a mouse and keyboard for data input. As such, the limitations of claims 13–14 are considered Applicant's Admitted Prior Art. See Final Rejection, 6/25/10, ¶ 44. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify O'Brien in view of Burke further in view of Chun further in view of Burke 2 to include the teaching of Applicant's Admitted Prior Art, providing the benefit of user friendliness via easy and convenient means of data entry.

22. Claims 17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Brien, U.S. Pat. 6,587,831 in view of Burke et al., Variable Neighborhood Search for Nurse Rostering Problems, Kluwer Academic Publishers, 12/19/2002, pg. 1–21 [hereinafter Burke] further in view of Chun et al., Nurse Rostering at the Hospital Authority of Hong Kong, American Association for Artificial Intelligence, 2000, pg. 1–6 [hereinafter Chun] further in view of Burke et al., Fitness Evaluation for Nurse Scheduling Problems, Proceedings of Congress on Evolutionary Computation, CEC2001, Seoul, IEEE Press, 2001, pg. 1139–46 [hereinafter Burke 2] further in view of public use of GMT Planet software, as evidenced by gmtcorp.com, GMTPlanet, 2001, pg. 1–45, retrieved from web.archive.org, http://web.archive.org/web/20010415113036/ www.gmtcorp.com/ [hereinafter GMTcorp.com]. (see PTO-892, 8/22/2008, page 2, ref. V)

23. As per claim 17, O'Brien in view of Burke further in view of Chun further in view of Burke 2 does not explicitly teach wherein the resources selected for the initial workforce schedule are dynamically selected. However, GMTPlanet teaches this concept in the analogous art of automated staff scheduling (GMTcorp.com, pg. 22, top of page, discussing dynamic scheduling; Scheduling Agents).

It would have been obvious to one of ordinary skill in the art to include in the automatic workforce schedule generators of O'Brien in view of Burke further in view of Chun further in view of Burke 2 to include the teaching of GMTPlanet for the benefit of a more expedient scheduling of employees, saving the company time and money. Moreover, it would have been obvious since the claimed invention is merely a combination of old elements, and in the

combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

24. As per claim 20, O'Brien in view of Burke further in view of Chun further in view of Burke 2 does not explicitly teach generating a color coded report to illustrate how closely the optimized workforce schedule is meeting the forecasted demand for a given position. However, GMTPlanet teaches this concept in the analogous art of automated staff scheduling (GMTcorp.com, pg. 4–5, 12–14, Figs.4–5, 12–14).

It would have been obvious to one of ordinary skill in the art to include in the automatic workforce schedule generators of O'Brien in view of Burke further in view of Chun further in view of Burke 2 to include the teaching of GMTPlanet because color-coded reports enable to scheduling entity to better pinpoint the source of deficiencies and remedy them quickly. Moreover, it would have been obvious since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

25. Claims 21–22, 26–29, 32, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Brien, U.S. Pat. 6,587,831 in view of Chun et al., Nurse Rostering at the Hospital Authority of Hong Kong, American Association for Artificial Intelligence, 2000, pg. 1–6, further in view of Burke et al., Fitness Evaluation for Nurse Scheduling Problems, Proceedings of Congress on Evolutionary Computation, CEC2001, Seoul, IEEE Press, 2001, pg. 1139–46 [hereinafter Burke 2].

26. As per claim 21, O'Brien teaches a system for automatically generating an optimized workforce schedule, comprising: a scheduling server (Fig. 1, ref. 110, Host; col. 3, lines 23–38, discussing host server capabilities); an access device communicatively coupled with the scheduling server over a data communications network, the access device configured to allow a user to interact with the scheduling server (Fig. 1, refs. 120, 130, Internet); a data storage area configured to store past schedules, forecasted demand, and employee attributes (col. 3, lines 24–27; Fig. 3, ref. 150, 152, 154, 156, and 180; Fig. 4, ref. 410); the scheduling server configured to process past schedules using a pattern recognition procedure to recognize historical shift patterns for a particular position indicated in the past schedules, wherein the historical shift patterns comprise a resource dependent shift pattern, and a time dependent shift pattern (Fig. 4; col. 5, lines 10–13, 25–37, 48–62, discussing the forecasting module analyzing intrinsic company workload data to derive optimal shift patterns and staffing requirements; col. 5, lines 30–33, discussing workload records and final staffing requirements for each shift being analyzed; lines 35–37, discussing patterns of high and low volume for various times of the day being found), the scheduling server further configured to create an initial workforce schedule based on the

historical shift patterns, forecasted demand, and employee attributes (Fig. 2, refs. 230 and 250; Fig. 4, refs. 420 and 450; col. 5, lines 48–62, col. 5, line 65–col. 6, line 2; col. 1, lines 49–51, discussing employee preferences which are taken into account in devising a schedule); and the scheduling server further configured to create an optimized workforce schedule based on user input via the access device (id.).

O'Brien does not explicitly teach use of a ratio dependent shift pattern based on when a certain number of a first type of position must be scheduled with a certain number of a second type of position, in its shift scheduling analysis. However, Chun, in the analogous art of nurse rostering via constraint satisfaction problem modeling, teaches ratio dependent shift patterns based on when a certain number of a first type of position must be scheduled with a certain number of a second type of position (pg. 3, Manpower Demand Constraint, "This type of constraint defines manpower requirement for a specific rank, staff group, gender or their combination in a particular shift, as well as the alternative manpower demand patterns in case the original demand cannot be satisfied. For example: □ Exactly 4 registered nurses on Monday morning can be replaced by 3 registered nurses and 1 enrolled nurse or by 2 registered nurses and 1 student nurse."). Although not explicitly recognized in the context of a historical shift pattern, applying the known technique of historical shift pattern recordation and use to predict future shifts, as taught by O'Brien as discussed above, as well as by Burke 2 as discussed below, to a known element, namely a ratio dependent shift pattern based on when a certain number of a first type of position must be scheduled with a certain number of a second type of position, would have been obvious so as to produce a predictable result and result in an improved system that maximize the productivity of available resources, avoiding the wasteful scenario wherein

capable workers are not assigned to a potential job merely because they are unaccustomed to performing said job and therefore such an arrangement goes unrecognized by the scheduling means.

O'Brien does not explicitly teach wherein the resource dependent shift pattern is based on when a resource is working a particular position. However, Chun teaches this concept because its rostering engine takes into account historical staffing data including when a resource is working a more or less desirable shift (pg. 4, "In addition, our Rostering Engine ensures that all staffs are treated fairly by using different types of historical statistics to generate the roster. The statistics indicate how "well" each staff has been treated so far, in terms of the number of more desirable or less desirable shifts assigned in the past. Based on the statistics, the Rostering Engine tries to evenly assign "good" shifts to balance out the statistics"). It would have been obvious to one having ordinary skill in the art to modify O'Brien to include the teachings of Chun for the benefit of maintaining employee productivity by providing them a fair and balanced shift schedule, avoiding the perception or reality of employee bias.

O'Brien in view of Chun does not explicitly teach wherein the time dependent shift pattern is based on when a specific task needs to be performed. However, Burke 2 teaches this concept in the analogous art of nurse scheduling problem analysis (pg. 1142, Tables 2 and 3, showing previous planning period data to be used in initialization of solution for the current planning period, the previous planning period data including particular times of shifts, morning M, late L, or night N (see Table 1) when shift-related tasks needed to be performed by people P1–P5). It would have been obvious to one having ordinary skill in the art to modify O'Brien in

view of Chun to include the teaching of Burke 2 for the benefit of a more focused analysis that meets staffing requirements while maximizing usage of time available for resource productivity.

27. As per claim 22, O'Brien teaches wherein the access device and the scheduling server are at different locations (Fig. 1, Host and Manager/Employees are at different locations).

28. As per claim 26, O'Brien teaches wherein the scheduling server is further configured to consider resources availability when creating the initial workforce schedule (col. 4, lines 13–20, discussing employee availability as an element of employee data, lines 51–52).

29. As per claim 27, O'Brien teaches wherein the scheduling server is further configured to consider a predefined number of work hours per week for an employee when creating the optimized workforce schedule (col. 3, lines 63–66, business Parameters, minimum hours per schedule per position; col. 4, lines 13–18, Employee data, minimal hours of work per schedule, lines 30–39).

30. As per claim 28, O'Brien does not explicitly teach wherein the scheduling server is further configured to consider an employee skill set when creating the optimized workforce schedule. However, Chun teaches this (pg. 5, "One potential enhancement is departmental-level rostering that further enhances staff utilization by sharing staff across wards depending on workload requirements of the wards and the skill sets of the available staff."; "pg. 4–5, "The most important objective of any workforce scheduling system is, of course, to improve the

quality of service provided by the organization. This quality of service can be ensured by scheduling an adequate number of staff with a well-balanced set of skills and experiences to handle any potential work that might be needed in the ward."; pg. 1–2, "For example, the SRS should ensure that there is an adequate number and mixture of skilled staff present to maintain committed level of service quality."). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify O'Brien to include the teaching of Chun for the benefit of increased efficiency and productivity by matching qualified individuals to positions for which such qualifications are demanded, otherwise being relegated to inefficiency lower productivity in the event an unqualified individual is found to be failing at an overly burdensome task.

31. As per claim 29, O'Brien in view of Chun does not explicitly teach wherein the scheduling server is further configured to consider full time and part time employee availability when creating the optimized workforce schedule. However, O'Brien does teach generating an optimized workforce schedule based on various employee availability (col. 4, lines 12–13, 19–20, 25–27, discussing availability as data input of each employee; col. 4, lines 51–58, discussing use of availability data in calculating optimal schedule; col. 9, lines 17–26, disclosing that availability can be changed from availability just on weekdays to weekdays and weekends) However, Burke 2, in the analogous art of nurse rostering problems, teaches both full time and part time employee availability as a scheduling constraint (pg. 1141, 3.3.2 Constraints defined by the work regulation). It would have been obvious to one of ordinary skill in the art to modify O'Brien in view of Chun to include the teachings of Burke 2 because the claimed invention is

merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable, providing for a more accurate schedule and result in an improved system with enhanced operational efficiency.

32. As per claim 32, O'Brien in view of Chun does not explicitly teach wherein the forecasted demand comprises multiple forecasts for a particular position. However, producing a demand forecast for a particular position was rendered obvious by O'Brien as discussed above in the rejection of claim 6 above. Also, O'Brien has the capability to perform demand forecasts at different times and hence multiple forecasts (col. 1, lines 16–20; col. 8, lines 47–50; col. 14, lines 20–22). As such, it would have been obvious to one of ordinary skill in the art to modify O'Brien because the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable, enabling a scheduling manager be better prepared and make more informed decisions by being aware of different demand scenarios for a particular position. Furthermore, it is noted that reiterating the demand forecasting process to attain another forecast for the same position can be reasonably considered mere duplication of parts for multiplicative effect, which has no patentable significance unless new and unexpected result is produced. In re Harza, 124 USPQ 378 (CCPA 1960); St. Regis Paper Co. v. Bemis Co., 193 USPQ 8, 11; 549 F2d 833 (7th Cir. 1977). Here, the predictable result of a second demand forecast for the position is neither new nor unexpected.

33. As per claim 34, O'Brien does not explicitly teach wherein the data storage area is coupled with a data server that is separate from the scheduling server. However, Chun teaches this (Fig. 1, showing rostering engine program and database server as separate entities). It would have been obvious to modify O'Brien to include the teaching of Chun for the benefit of increased data management and storage capabilities and enhanced ability to pinpoint the source of deficiencies with software/hardware components by segregating the components.

34. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Brien, U.S. Pat. 6,587,831 in view of Chun et al., Nurse Rostering at the Hospital Authority of Hong Kong, American Association for Artificial Intelligence, 2000, pg. 1–6 further in view of Burke et al., Fitness Evaluation for Nurse Scheduling Problems, Proceedings of Congress on Evolutionary Computation, CEC2001, Seoul, IEEE Press, 2001, pg. 1139–46 [hereinafter Burke 2] further in view of Adhikari et al., U.S. Pat. No. 7,222,082 [hereinafter Adhikari] (see PTO-892, 2/28/2008, ref. E).

35. As per claim 25, O'Brien in view of Chun further in view of Burke 2 does not explicitly teach wherein the access device allows a user to adjust the forecasted demand for an employee position. However, Adhikari, in the analogous art of workforce forecasting, teaches this concept via user's ability to adjust (i.e. edit) the forecasted demand (i.e. volume) (column 10, lines 53-54). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the system of O'Brien, Chun, and Burke 2 with the feature of wherein the access device allows a user to adjust the forecasted demand for an employee as taught by Adhikari, as all prior art references mentioned above are directed to a system for automatically generating an optimized workforce schedule. The motivation for doing so would have been to provide the user more flexibility and therefore enable her to create the best workforce schedule possible, saving the company time and money in the process. Moreover, it would have been obvious since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did

separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

36. Claims 30–31 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Brien, U.S. Pat. 6,587,831 in view of Chun et al., Nurse Rostering at the Hospital Authority of Hong Kong, American Association for Artificial Intelligence, 2000, pg. 1–6 [hereinafter Chun] further in view of Burke et al., Fitness Evaluation for Nurse Scheduling Problems, Proceedings of Congress on Evolutionary Computation, CEC2001, Seoul, IEEE Press, 2001, pg. 1139–46 [hereinafter Burke 2] further in view of Applicant's Admitted Prior Art.

37. As per claims 30–31, O'Brien in view of Chun further in view of Burke 2 does not explicitly teach wherein the input device is a mouse or a keyboard. However, O'Brien does teach inputting scheduling information and changes via a standard computer. Official Notice was taken and not since adequately traversed by Applicant that a standard computer comprises a mouse and keyboard for data input. As such, the limitations of claims 30–31 are considered Applicant's Admitted Prior Art. See Final Rejection, 6/25/10, ¶ 44. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify O'Brien in view of Chun further in view of Burke 2 to include the teaching of Applicant's Admitted Prior Art, providing the benefit of user friendliness via easy and convenient means of data entry.

38. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Brien, U.S. Pat. 6,587,831 in view of Chun et al., Nurse Rostering at the Hospital Authority of Hong Kong, American Association for Artificial Intelligence, 2000, pg. 1–6 [hereinafter Chun] further in view of Burke et al., Fitness Evaluation for Nurse Scheduling Problems, Proceedings of Congress on Evolutionary Computation, CEC2001, Seoul, IEEE Press, 2001, pg. 1139–46 [hereinafter Burke 2] further in view of public use of GMT Planet software, as evidenced by gmtcorp.com, GMTPlanet, 2001, pg. 1–45, retrieved from web.archive.org, http://web.archive.org/web/20010415113036/ www.gmtcorp.com/ [hereinafter GMTcorp.com].

39. As per claim 33, O'Brien in view of Chun further in view of Burke 2 does not explicitly teach a report generator for generating a color coded report to identify how closely the optimized workforce schedule is meeting the forecasted demand for a given position. However, GMTPlanet teaches this concept in the analogous art of automated staff scheduling (GMTcorp.com, pg. 4–5, 12–14, Figs.4–5, 12–14).

It would have been obvious to one of ordinary skill in the art to include in the automatic workforce schedule generators of O'Brien in view of Chun further in view of Burke 2 to include the teaching of GMTPlanet because color-coded reports enable to scheduling entity to better pinpoint the source of deficiencies and remedy them quickly. Moreover, it would have been obvious since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

(10) Response to Argument

1. Examiner first notes that in regards to the above grounds of rejection, each of the secondary references, for example Burke, Chun, and Burke 2 as to claim 1, that have been used in combination with primary reference, for example O'Brien as to claim 1, are being used to modify the primary reference alone, not of one or more of the other secondary references also cited in the respective combination. As such, each secondary reference is considered to individually build upon O'Brien in order to render a prima facie case of obviousness. Additionally, Examiner posits that the principle of operation of O'Brien as a result of each of the secondary reference-induced modifications remains the same and does not undergo material change. O'Brien, throughout the formulation of the various cited combinations, remains a method and system for automatically generating an optimized workforce schedule, comprising: in a scheduling server, processing past schedules using a pattern recognition procedure to recognize historical shift patterns for a particular position indicated in the past schedules, creating an initial workforce schedule and refining it based on historical shift patterns and employee attributes to generate an optimized workforce schedule based on the initial workforce schedule, forecasted demand, and employee preferences. As such, Examiner's cited combinations of references used to render claim 1 et al. obvious are considered sufficient.

2. Appellant argues that Burke 2 does not teach recognizing a historical time dependent shift pattern based on when a specific task needs to be performed, and that therefore the rejections of claims 1, 3–22, 25–34 under 35 U.S.C. 103 are improper. Appellant's Appeal Brief,

1/21/11, Argument, pg. 7–9. In response, Examiner respectfully disagrees. With respect to the historical time dependent shift pattern, in addition to the citations and rationale already provided in the Grounds of Rejection above, Burke 2 discloses this limitation via its use of cyclic constraints enabled by patterns (pg. 1141, Left Column, line 35). Furthermore, Burke 2 discusses the use of previous shift solutions being used as initial or start values for future or current shift solution model (pg. 1141, Right Column, lines 26–28, pg. 1142, Left Column, lines 50–53, Table 2, showing the shift pattern for previous planning period used to initialize current planning period; see also Table 5, showing numbering constraints for previous planning period used for current/future determinations). Furthermore, with respect to the task that needs to be performed being a specific one, it is Examiner's position that previous and current morning, late, and night shift assignments constitute specific tasks because they represent one or more tasks falling into a specifiable or particular category. Here, morning, late and night are temporally based, particular time slots during which the employee is to perform one or more tasks depending upon the particular time slot. Thus, these shift patterns are considered to be specific tasks. Additionally, Examiner notes that at least Chun, at pg. 3 via its various ratio-dependent work constraints wherein certain kinds or times of tasks can only be performed by certain types or combinations of nurses, also teaches this concept of specific tasks needing to be performed.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Justin M Pats/

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/R. David Rines/

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